How to reduce the impact of pesticides

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REDUCE PESTICIDES

INCREASE SUSTAINABILITY

BETTER USE OF SPRAYERS

INNOVATION
Operator training is essential to use the Sprayer optimally and **distribute the chemical only where it is needed**, avoiding dispersions and consequently costs and pollution ...
Sprayers are a key to gain more sustainability as set by the global climate strategies.

- Reduction of residues
- Less water pollution
- Reduction of chemicals
- Reduction of losses = more environmental sustainability
BETTER USE OF SPRAYERS

Loss of chemical in atmosphere or on the soil (drift).
BETTER USE OF SPRAYER MACHINES

Loss of money!
BETTER USE OF SPRAYER MACHINES

In the EU we have regular “Inspections of Pesticide Application Equipment” (some examples)

Safety aspects
Power transmission
The power take-off driveshaft guard and the guard of the power input connection shall be fitted and in good condition and the protective devices and any moving or rotating power transmission parts shall not be affected in their function so as to ensure protection of the operator.
BETTER USE OF SPRAYERS

Inspection of Pesticide Application Equipment (some examples)

**Pump**
The pump capacity shall be suited to the needs of the equipment and the pump must function properly in order to ensure a stable and reliable application rate. There shall be no leakages from the pump.

- Visual observation of presence of pulses due to the bad pump’s work
- Visual observation of leakages from the pump
BETTER USE OF SPRAYER MACHINES

Inspection of Pesticide Application Equipment
(some examples)

Agitation

Agitation devices must ensure a proper recirculation in order to achieve an even concentration of the whole volume of the liquid spray mixture in the tank.

A clearly visible recirculation of the liquid inside the tank shall be obtained with the active distribution at nominal PTO rotation speed and with the tank filled to half its nominal capacity.
BETTER USE OF SPRAYER MACHINES

Inspection of Pesticide Application Equipment
(some examples)

**Spray liquid tank**
Spray tanks including indicator of tank content, filling devices, strainers and filters, emptying and rinsing systems, and mixing devices shall operate in such a way as to minimise accidental spillage, uneven concentration distribution, operator exposure and residual content.

At least one level indicator clearly readable and visible shall be present both from the driver's seat and from the filling station.

Visual check
BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

The effect of a not adequate adjustment
BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

Result of a good adjustment of the sprayer: the direction of the air produced by the fan

- Loss 25%
- On target 50%
- Loss 25%
- On target 100%
BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

Use of a specific test bench to verify the correct adjustment of an air-assisted sprayer
BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

Effect of the wind on the distribution: the importance of the distance of the boom from the crop or the ground
INNOVATION

Sprayer with vegetation sensors

Controlled parameters:
- number of open nozzles and operating pressure
- air flow

Crop Identification System

Dose reduction: $10 \div 40\%$
INNOVATION

Weed control - Targeted spraying with optical sensors
INNOVATION

Weed control - Targeted spraying with optical sensors

PPP dose reduction up to 40%
INNOVATION

Sprayers with other sensors

Automatic distribution interruption at the end of the field with a multi row sprayer
INNOVATION

VarioWindSelect system developed at INSAD (PL)

Automatic activation of the type of nozzle according to the wind speed
INNOVATION

Optima Smart Sprayer

- ultrasonic sensors
- multispectral camera
- RTK GPS
INNOVATION

Self-propelled autonomous sprayers
INNOVATION

A new technology: the UV germicide radiation for plant protection

Why this new approach:

• replacing chemistry-based control methods of plant diseases with physics-based control methods;
• retrofit interventions on existing machines;
• new information management solutions able to favour, forms of automated monitoring, with assisted remote management of all processes and information storage.
Thank you for your attention!!